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Growth kinetics of the homogeneously nucleated water droplets: Simulation results

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Abstract

The growth of homogeneously nucleated droplets in water vapor at the fixed temperatures T = 273, 283, 293, 303, 313, 323, 333, 343, 353, 363 and 373 K (the pressure p = 1 atm.) is investigated on the basis of the coarse-grained molecular dynamics simulation data with the mW-model. The treatment of simulation results is performed by means of the statistical method within the mean-first-passage-time approach, where the reaction coordinate is associated with the largest droplet size. It is found that the water droplet growth is characterized by the next features: (i) the rescaled growth law is unified at all the considered temperatures and (ii) the droplet growth evolves with acceleration and follows the power law.

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